ServSwitch Affinity

Affordable many-to-many multiplatform KVM switching.

FEATURES

» As many as 16 users have keyboard/mouse/video control over as many as 1024 PC, Sun, RS/6000, SGI, HP, and/or Alpha computers.

» Easily expandable with plug-in port cards and flexible cabling.

» Free lifetime firmware upgrades.

» Supports video resolutions up to 1280 x 1024.

» High levels of security, including passwords and access profiles.

» Controlled through on-screen display, with additional keyboard commands and a terminal-based serial-port options menu.

» Some models have redundant power supplies.

OVERVIEW

Is your server room growing by leaps and bounds? Wouldn't it be nice to have a keyboard/video/mouse-switching system that could keep up with all the hardware, all the users, the constant changes, and the realities of your budget?

Our ServSwitch Affinity™ could be the one. It supports most major hardware platforms, including IBM® PS/2®, PC/AT®, and RS/6000®; Sun®; SGI™; HP® 700 and 9000 series; and Compaq® Alpha. IBM type computers can use any keyboard mode and any of a variety of mouse types. Video can be any of several types at up to 1280 x 1024 resolution.

You can attach as many as 16 computers to a single unit or 1024 computers to a daisychained ServSwitch Affinity system. Either way, you can also attach up to 4, 8, or 16 independent users; more users can be connected, but they'll have to contend for access.

Here's how it works: Each ServSwitch Affinity has four slots for port cards. Our 0 x 4 port card (KV1300C) has four CPU (computer) ports and a serial port only; the 1 x 4 card (KV1301C-R2) also has a KVM (user) port.

The ServSwitch Affinity chassis also has a fifth, top slot used for expansion purposes; the 16-user models have a matching sixth, bottom slot. Our 4-user models ship with a terminator card (KV1304C) installed in the expansion slot; you can swap in a 4-User Expansion Card (KV1305C) if you'll be daisychaining the ServSwitch Affinity. The 8- and 16-user models, which are designed to be part of a daisychain, come without anything installed in the expansion slot(s). You need to purchase and install an 8- and 16-User Expansion Card (KV1306C) for each slot for the unit to work.

One difference between the 4-user ServSwitch Affinity models with single power supplies is which cards they're preinstalled with; see the start of the Ordering Information on **page 5** for a list of which cards come with each model. The 4-User Standalone Chassis models (as well as the 1 x 4 port card) also offer serial emulation. This enables access to any RS-232 serial device.

Add capacity to your ServSwitch Affinity system at any time by installing port cards in vacant slots or add more chassis to a daisychain.

The port card's serial ports are used for terminal-based initial system configuration; they are also used to upgrade the ServSwitch Affinity's firmware. (Upgrades are free for the lifetime of the ServSwitch Affinity!)

The ServSwitch Affinity's main controls are its on-screen menus (with a full range of configuration and operating functions). These menus are augmented by a number of keyboard commands.

For added security, the ServSwitch Affinity supports password-protected access groups. Computers can belong to multiple groups, but users can only belong to one. Users will only be able to access the computers in their group.

When users do access computers, they'll have one of four assigned access levels: view only (no keyboard/mouse control), share (view access until current user becomes inactive, then add keyboard and mouse), control (sole control but others can view), or private (sole control, no one else can interrupt or view).
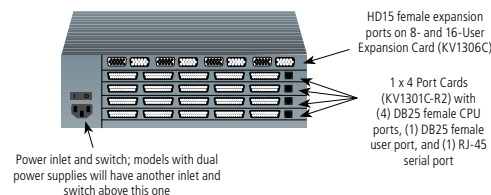
Models with dual, redundant power supplies are available. If one power supply fails, the other powers the load until you install a replacement supply.

04/16/2010
#22921

724-746-5500 | blackbox.com

◆◆ BLACK BOX
NETWORK SERVICES

2 of 6

OVERVIEW

If you need to share access to a large number of CPUs, think about putting in a ServSwitch Affinity daisychain made up of 4-user expansion chassis (like the fully loaded one shown **at right**) or 8- or 16-user chassis. They come empty (no cards installed), but you can install 1 expansion card (or 2 in the 16-user units) and add as many as 4 Port Cards (0 x 4 or 1 x 4) to them, giving you a maximum of 4, 8, or 16 user stations and 16 CPUs attached to each unit.

(Keep in mind that however many user stations an Affinity is designed for, only that many video paths can be open through that unit at a time. For example, a 4-user unit only has four video paths. If there are already four operators attached to it, and an operator at another ServSwitch Affinity selects one of the 4-user's CPUs, one of the 4-user unit's operators—and all other operators on that slot— will be locked out until the new connection ends.)
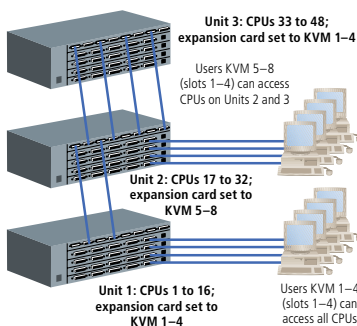
The 8-user units look very similar to the 4-user unit, but they accept only 8-User Expansion Cards like the one shown **below**. The 16-user units accept two of the 8-User Expansion Cards. The 8-User Expansion Cards have jumper blocks that you can set
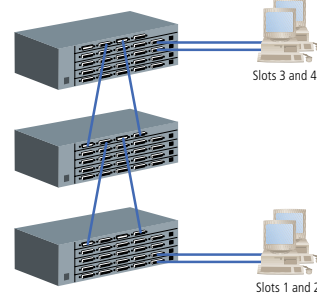

HD15 female expansion ports on 8- and 16-User Expansion Card (KV1306C)

1 x 4 Port Cards (KV1301C-R2) with (4) DB25 female CPU ports, (1) DB25 female user port, and (1) RJ-45 serial port

Power inlet and switch; models with dual power supplies will have another inlet and switch above this one

to control which four KVM slots are used by the operators attached to the ServSwitch Affinity chassis that the card is installed in: KVMs 1 through 4, 5 through 8, 9 through 12, or 13 through 16.

On the 8- and 16-User HD15 Expansion Cards, IN 1 and OUT 1 carry the signals for either KVM 1 and 2 or, if installed in the bottom slot of a 16-user unit, KVM 9 and 10; IN 2 and OUT 2 carry the signals for either KVM 3 and 4 or KVM 11 and 12; and so on. A pair of jumper blocks determines which four KVM slots the four users on that ServSwitch Affinity chassis will use.

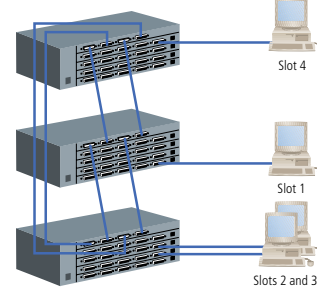### Regular Bus

Unit 3: CPUs 33 to 48; expansion card set to KVM 1–4

Users KVM 5–8 (slots 1–4) can access CPUs on Units 2 and 3

Unit 2: CPUs 17 to 32; expansion card set to KVM 5–8

Unit 1: CPUs 1 to 16; expansion card set to KVM 1–4

Users KVM 1–4 (slots 1–4) can access all CPUs

Split Bus

Slots 3 and 4

Slots 1 and 2

Ring

Slot 4

Slot 1

Slots 2 and 3

Because the control paths are carried on different connectors, you have maximum flexibility for designing your daisychain layout:
- If all of your users are on one chassis, use the regular bus topology (**above**, **left**).
- If you have two users on one chassis and two on another, use the "split bus" topology (**above**, **middle**).
- If your users are spread across several chassis, use the ring topology (**above**, **right**). Keep in mind that only one user at a time can use the bus that interconnects daisychained ServSwitch

Affinity units, especially when you implement a ring topology. For example, when your ServSwitch Affinity units are interconnected in a ring, if any user on slot 1 selects a CPU attached to a ServSwitch Affinity unit other than his own, no other slot 1 user can select any CPUs.

Compliance — CE, FCC Part 15 Subpart B Class A, IC Class/classe A

Configuration per Chassis (Maximum) —
KV132A-R2: (2) users, (8) CPUs, (1) expansion card;
KV130A, KV130DA, KV134A-R2, KV138A, KV138DA:
(4) users, (16) CPUs, (1) expansion card;
KV139A, KV139DA: (4) users, (16) CPUs, (2) expansion cards

Construction — Steel chassis

CPUs Supported — IBM PC and compatibles, PS/2, Sun, and most
PC UNIX® (RS/6000, HP9000®, SGI, Compaq Alpha, and others);
daisychainable to connect up to 1000 CPUs

Data Format — 8 data bits, 1 stop bit, no parity (fixed)

Data Rate — 9600 bps or 57.6 kbps

Distance (Maximum) —
20 ft. (6.1 m) of CPU or user cable—possibly as much as 100 ft. (30.5 m)
if cable is coaxial, depending on CPUs, monitor, and video
resolution—from any ServSwitch Affinity port card to any device
attached to it;
100 ft. (30.5 m) of expansion cable between any two ServSwitch
Affinity units;
50 ft. (15.2 m) of serial cable from the RS-232 port of any ServSwitch
Affinity port card to a computer's serial port

Fuses — KV13xDA models: Autoresetting switch fuses that cut in when power
surges exceed the maximum ratings of the chassis

Hardware Required — Monitor that supports your computer's highest video
standard; in multiplatform applications, should be multisync model that can
accept video from either Composite sync or separate horizontal/vertical sync
signals

Mice Supported —
User: PS/2 or Sun;
CPU: Serial or PS/2, Sun Microsystems® and compatibles

Resolution (Maximum) — 1280 x 1024, but will depend on the length
of CPU and user cables in your system

Serial (RS-232) Characteristics — Protocol: Asynchronous

Standards —
With original Serv cabling: VGA (color or monochrome/page white) video;
With original Serv cabling (minimal) or coaxial cabling (recommended):
SVGA video;
With coaxial cabling: XGA (color or monochrome), Sun, RS/6000,
or SGI video

User Controls —
For system: Keyboard commands and on-screen menus;
On ServSwitch Affinity chassis: Rear-mounted ON/OFF rocker switch(es);
KV13xDA models: (2); All other models: (1);
On all expansion cards (KV1305C– KV1306C): Board-mounted BUS/RING
jumper;
On 8-user expansion card (KV1306C): (2) Board-mounted jumper blocks
for user-port numbering

Interfaces —
On CPU ports and user ports of Port Cards and IN 1 and OUT 1 ports of
primary expansion cards:
Proprietary composite of:
Keyboard: IBM PS/2, PC/AT, or Sun compatible;
Mouse: PS/2, RS-232 serial (except on user ports), or Sun compatible;
Video (see Standards **below**); IN 1 and OUT 1 also carry system-
control signals; On expansion cards' other IN and OUT ports:
Proprietary video composite (see Standards **below**);
On serial ports of port cards: EIA/TIA RS-232 proprietary pinning
on RJ-12 ("6-wire RJ-11") connectors, DTE

Connectors — All chassis: (1) IEC 320 power;
KV132A-R2: Also has (10) DB25 F, (2) RJ-11;
KV134A-R2: Also has (20) DB25 F, (4) RJ-11;
KV1300C: (4) DB25 F;
KV1301C-R2: (5) DB25 F;
KV1305C: (2) DB15 F, (2) DB15 M;
KV1306C: (4) HD15 M, (4) HD15 F;
KV140 series cables: (1) DB15 F, (1) DB15 M;
KV180 series cables: (1) HD15 M, (1) HD15 F;
KV130 series cables: (2) RJ-45 M

Indicators — All models: ON/OFF switch(es) are dark when ServSwitch
Affinity is OFF, backlit when ON;
KV13xDA models: (3) Front-mounted power-supply status LEDs:
(1) for supply 1 (the upper transformer), lit while supply
is outputting power; (1) for supply 2 (the lower transformer),
lit while supply is outputting power; (1) for the ServSwitch Affinity
chassis (marked "SYSTEM"), lit while either supply is outputting
power unless internal diodes have failed

Temperature Tolerance — 32 to 113°F (0 to 45°C)

Humidity Tolerance — Up to 80%, noncondensing

Altitude (Maximum) — 10,000 ft. (3048 m)

Power —
Input: 90 to 264 VAC, 47 to 63 Hz, 700 mA from AC outlet(s) through
included power cord(s) and inlet(s) into internal transformer(s);
KV13xDA models: Dual transformers with separate AC inlets,
electrically isolated from one another;
All other models: Single transformer;
Consumption: Up to 40 VA (40 watts)

Size — KV132A-R2, KV130A, KV130DA, KV134A-R2, KV138A, KV138DA:
5.3"H (3U) x 16.7"W x 7"D (13.5 x 42.4 x 17.8 cm);
KV139A, KV139DA: 7"H (4U) x 16.7"W x 7"D (17.8 x 42.4 x 17.8 cm);
KV1300C, KV1301C-R2, KV1305C–KV1306C: 0.9"H x 13.9"W x 4.8"D
(2.3 x 35.3 x 12.2 cm);
KV1304C: 0.1"H x 4"W x 3"D (0.3 x 10.2 x 7.6 cm)

Weight — KV132A-R2, KV130DA, KV138DA: 12 lb. (5.4 kg);
KV130A, KV138A: 10.5 lb. (4.8 kg);
KV134A-R2: 14 lb. (6.4 kg);
KV139A: 11 lb. (5 kg);
KV139DA: 12.5 lb. (5.7 kg);
KV1300C, KV1301C-R2: 0.9 lb. (0.4 kg);
KV1304C: 0.2 lb. (0.1 kg);
KV1305C–KV1306C: 0.4 lb. (0.2 kg)

04/16/2010
#22921

724-746-5500 | blackbox.com

BLACK BOX
NETWORK SERVICES

4 of 6

KV130A

What's included

✦ The ServSwitch Affinity, including any cards and blanking plates that are normally preinstalled with your model. (Blanking plates will cover all unused slots, as well as the slot on 4-user models that the tiny terminator card is installed in.)
✦ A power cord.
✦ KV13xDA models only: A second power cord.
✦ A 6-ft. (1.8-m) serial cable with RJ-12 ("6-wire RJ-11") plugs.
✦ An RJ-12-to-DB9 modular adapter.
✦ A user's manual.

You may also need

• Keyboards, mice, and monitors for your users. If you're mixing platforms, we recommend true multiscan, multisync monitors capable of syncing to each CPU's video-output frequencies and compatible with all of the CPUs' video cards. Also, if one of the multiple platforms is IBM, the monitors must be able to accept both separate H/V sync and Composite sync. (Such monitors are widely available.) We recommend that the monitors be able to display a maximum resolution of not less than 1280 x 1024 at a maximum refresh rate of not less than 75 Hz.

Item	Code
ServSwitch Affinity	
2-User Architecture	
Preconfigured 2 Users x 8 Servers (plus Terminator Card)	
	KV132A-R2
4-User Architecture	**KV130A**
with Redundant Power Supply	**KV130DA**
Preconfigured 4 Users x 16 Servers (plus Terminator Card)	
	KV134A-R2
8-User Architecture	**KV138A**
with Redundant Power Supply	**KV138DA**
16-User Architecture	**KV139A**
with Redundant Power Supply	**KV139DA**
Port Cards	
0 Users x 4 Servers	**KV1300C**
1 User x 4 Servers	**KV1301C-R2**
4-User Terminator Card	**KV1304C**
4-User Expansion Card, DB15	**KV1305C**
8- and 16-User Expansion Card, HD15	**KV1306C**
If you've previously ordered a KV1301C and want to upgrade it to a KV1301C-R2 with serial capabilities, order…	
ServSwitch Affinity Upgrade Kit	**KV130-UPG**
You will need a CPU Cable for each CPU you attach…	
CPU/Server to ServSwitch Cables	
PS/2, Standard	
5-ft. (1.5-m)	**EHN151-0005**
10-ft. (3-m)	**EHN151-0010**
20-ft. (6.1-m)	**EHN151-0020**
PS/2, Coax	
2-ft. (0.6-m)	**EHN382-0002**
5-ft. (1.5-m)	**EHN382-0005**
10-ft. (3-m)	**EHN382-0010**
20-ft. (6.1-m)	**EHN382-0020**
35-ft. (10.7-m)	**EHN382-0035**
50-ft. (15.2-m)	**EHN382-0050**
75-ft. (22.9-m)	**EHN282-0075**
100-ft. (30.5-m)	**EHN282-0100**
AT, Standard	
5-ft. (1.5-m)	**EHN048-0005**
10-ft. (3-m)	**EHN048-0010**
20-ft. (6.1-m)	**EHN048-0020**
Sun, Coax, 13W3	
5-ft. (1.5-m)	**EHN206-0005**
10-ft. (3-m)	**EHN206-0010**
20-ft. (6.1-m)	**EHN206-0020**
35-ft. (10.7-m)	**EHN206-0035**
50-ft. (15.2-m)	**EHN206-0050**
75-ft. (22.9-m)	**EHN206-0075**
100-ft. (30.5-m)	**EHN206-0100**

EHN485

EHN225

Item	Code
CPU/Server to ServSwitch Cables (Continued)	
VGA, Coax	
5-ft. (1.5-m)	**EHN515-0005**
10-ft. (3-m)	**EHN515-0010**
20-ft. (6.1-m)	**EHN515-0020**
35-ft. (10.7-m)	**EHN515-0035**
50-ft. (15.2-m)	**EHN515-0050**
75-ft. (22.9-m)	**EHN515-0075**
100-ft. (30.5-m)	**EHN515-0100**
USB, Coax	
5-ft. (1.5-m)	**EHN485-0005**
10-ft. (3-m)	**EHN485-0010**
20-ft. (6.1-m)	**EHN485-0020**
35-ft. (10.7-m)	**EHN485-0035**
50-ft. (15.2-m)	**EHN485-0050**
75-ft. (22.9-m)	**EHN485-0075**
100-ft. (30.5-m)	**EHN485-0100**

You will need a User Cable for each monitor/keyboard/mouse user station you attach…

Item	Code
ServSwitch to Keyboard/Monitor/Mouse Cables	
PS/2, Standard	
1-ft. (0.3-m)	**EHN154-0001**
5-ft. (1.5-m)	**EHN154-0005**
10-ft. (3-m)	**EHN154-0010**
20-ft. (6.1-m)	**EHN154-0020**
PS/2, Coaxial	
2-ft. (0.6-m)	**EHN383-0002**
5-ft. (1.5-m)	**EHN383-0005**
10-ft. (3-m)	**EHN383-0010**
20-ft. (6.1-m)	**EHN283-0020**
35-ft. (10.7-m)	**EHN383-0035**
50-ft. (15.2-m)	**EHN383-0050**
100-ft. (30.5-m)	**EHN383-0100**
Sun, Coax, 13W3	
1-ft. (0.3-m)	**EHN201-0001**
5-ft. (1.5-m)	**EHN201-0005**
10-ft. (3-m)	**EHN201-0010**
20-ft. (6.1-m)	**EHN201-0020**
35-ft. (10.7-m)	**EHN201-0035**
50-ft. (15.2-m)	**EHN201-0050**
100-ft. (30.5-m)	**EHN201-0100**
VGA, Coax	
1-ft. (0.3-m)	**EHN225-0001**
5-ft. (1.5-m)	**EHN225-0005**
10-ft. (3-m)	**EHN225-0010**
20-ft. (6.1-m)	**EHN225-0020**
35-ft. (10.7-m)	**EHN225-0035**
50-ft. (15.2-m)	**EHN225-0050**
75-ft. (22.9-m)	**EHN225-0075**
100-ft. (30.5-m)	**EHN225-0100**

To connect multiple chassis, order…

Item	Code
Expansion Cables for 4-User Units, PVC	
10-ft. (3-m)	**KV140010**
20-ft. (6.1-m)	**KV140020**
35-ft. (10.7-m)	**KV140035**
50-ft. (15.2-m)	**KV140050**
100-ft. (30.5-m)	**KV140100**

Item	Code
Expansion Cable for 4-User Units, Plenum	
50-ft. (15.2-m)	**KV140050-PL**
Expansion Cables for 8- and 16-User Units, PVC	
10-ft. (3-m)	**KV180010**
20-ft. (6.1-m)	**KV180020**
35-ft. (10.7-m)	**KV180035**
50-ft. (15.2-m)	**KV180050**
100-ft. (30.5-m)	**KV180100**
Expansion Cable for 8- and 16-User Units, Plenum	
50-ft. (15.2-m)	**KV180050-PL**
To connect multiple chassis with RJ-45 expansion cards, order…	
ServSwitch Affinity Expansion Cables, RJ-45 Coax	
2-ft. (0.6-m)	**KV130002**
5-ft. (1.5-m)	**KV130005**
10-ft. (3-m)	**KV130010**
20-ft. (6.1-m)	**KV130020**
35-ft. (10.7-m)	**KV130035**
50-ft. (15.2-m)	**KV130050**
75-ft. (22.9-m)	**KV130075**
100-ft. (30.5-m)	**KV130100**
You might also need…	
Serial Cables	
DTE Cables with DB9 Female Connector	
5-ft. (1.5-m)	**EHN290-0005**
10-ft. (3-m)	**EHN290-0010**
20-ft. (6.1-m)	**EHN290-0020**
35-ft. (10.7-m)	**EHN290-0035**
50-ft. (15.2-m)	**EHN290-0050**
DTE Cables with DB25 Female Connector	
5-ft. (1.5-m)	**EHN291-0005**
10-ft. (3-m)	**EHN291-0010**
20-ft. (6.1-m)	**EHN291-0020**
35-ft. (10.7-m)	**EHN291-0035**
50-ft. (15.2-m)	**EHN291-0050**
DCE Cables with DB9 Male Connector	
5-ft. (1.5-m)	**EHN292-0005**
10-ft. (3-m)	**EHN292-0010**
20-ft. (6.1-m)	**EHN292-0020**
35-ft. (10.7-m)	**EHN292-0035**
50-ft. (15.2-m)	**EHN292-0050**
DCE Cables with DB25 Male Connector	
5-ft. (1.5-m)	**EHN293-0005**
10-ft. (3-m)	**EHN293-0010**
20-ft. (6.1-m)	**EHN293-0020**
35-ft. (10.7-m)	**EHN293-0035**
50-ft. (15.2-m)	**EHN293-0050**
Rackmount Kits	
To Mount 4- or 8-User Units in 19" Racks	**RMK19A**
To Mount 4- or 8-User Units in 23" Racks	**RMK23A**
To Mount 4- or 8-User Units in 24" Racks	**RMK24A**
To Mount 16-User Units in 19" Racks	**RMK19A139**
To Mount 16-User Units in 23" Racks	**RMK23A139**
To Mount 16-User Units in 24" Racks	**RMK24A139**
Surge Protector for IBM PS/2 Style Keyboard and Mouse Lines	
(6-Pin Mini-DIN Male/Female)	**SP519A-R2**
Surge Protector for IBM PC/AT Style Keyboard Lines	
(5-Pin DIN Male/Female)	**SP518A-R2**